

**Notice of Allowability**

Application No.

10/676,470

Applicant(s)

YAMAMOTO ET AL.

Examiner

Alix Elizabeth Echelmeyer

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Request for Continued Examination filed March 20, 2007.
2. ☒ The allowed claim(s) is/are 1-13.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other _____   |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 20, 2007 has been entered.

2. Claims 1-6 have been amended. Claims 7-13 have been added. Claims 1-13 are allowed.

### ***Reasons for Allowance***

3. The following is an examiner's statement of reasons for allowance:

- The claims have been amended to overcome the closest prior art. The references cited in previous actions are: Formanski et al. (US Pre-Grant Publication 2002/0142200) and Feucht et al. (US Patent 6,237,336).
- Regarding the Formanski et al. reference, the instant claims contain sufficient limitations to the mixing system for the exhaust of the fuel cell to overcome the teachings in Formanski et al., since Formanski et al.

teaches only that the cathode and hydrogen exhausts should be mixed but does not teach any structure regarding the mixing device.

- Regarding the Feucht et al. reference, the instant claims have been amended to further define the mixing structure of the instant invention, overcoming the teachings of Feucht et al. The mixing chamber seen in Figure 3 of Feucht et al. contains a pipe penetrating one wall of a mixing chamber, which the examiner has stated in previous actions is considered to be analogous to the reservoir of the instant invention. However, the mixing chamber of Feucht et al. does not teach the pipe penetration two walls of the reservoir, as the newly amended claim 1 of the instant invention requires.
- The claims contain language that clearly limits the invention to the fuel cell art. For example, Claim 1 is drawn to "an apparatus for dilution of discharged fuel of a fuel cell." While the preamble to the claim may appear to be non-limiting to the fuel cell art, the body of the claim contains sufficient limitations to require specific parts of the fuel cell needed for the invention, such as "a hydrogen gas inlet for guiding purged hydrogen gas coming from the fuel cell."
- Shaffer et al. (US Patent 6,065,961) is cited. Shaffer et al. teach a gas mixing chamber for mixing air and fuel to be combusted (abstract). The mixer of Shaffer et al. includes at least one chamber for the inlet of fuel to be mixed with air before entering a combustion chamber (Figure 1; column 2 lines 49-65). The fuel is educed into the tubes through the holes, ensuring homogeneity of the mixture

Art Unit: 1745

(column 2 lines 6-14). While the mixing structure of Shaffer et al. matches the mixing structure of claim 1, there is no motivation to use the mixing chamber of Shaffer et al. in a fuel cell exhaust system such as the one of Formanski et al. The reason given by Shaffer et al. to mix the gases in the taught structure is to ensure that the stoichiometry of the reactants is such that NO<sub>x</sub> emissions are substantially reduced (column 1 lines 10-15). Since there is no combustion of the exhaust gases in the instant invention, there would be no need to ensure proper stoichiometry as would be produced by the structure of Shaffer et al.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1745

aee



**SUSYTSANG-FOSTER**  
**PRIMARY EXAMINER**